

What is Claimed is:

1           1. A powder for forming a resorbable bone graft material for implant in a  
2 bone defect, said powder comprising calcium sulfate hemihydrate mixable with a diluent  
3 in a diluent to powder weight ratio from 0.19:1 to 0.31:1.

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5           2. A powder for forming an injectable resorbable bone graft material for  
6 minimally invasive implant in a bone defect, said powder comprising calcium sulfate  
7 hemihydrate mixable with a diluent in a diluent to powder weight ratio from 0.19:1 to  
8 0.31:1 to form an injectable paste.

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2           3. An injectable resorbable bone graft material in the form of a paste for  
3 minimally invasive implant in a bone defect comprising a powder formed of calcium  
4 sulfate hemihydrate and a diluent mixed with said powder, said calcium sulfate  
5 hemihydrate forming, by weight, from 99.8% to 100% of said powder, and said diluent to  
powder weight ratio being from 0.19:1 to 0.31:1.

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4           4. The injectable resorbable bone graft material in the form of a paste for  
minimally invasive implant in a bone defect recited in claim 3, further comprising an  
accelerant wherein said accelerant includes calcium sulfate dihydrate and said  
accelerant forming, by weight, from 0% to 0.2% of said powder.

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6           5. The injectable resorbable bone graft material of claim 4, wherein said  
7 diluent includes sterile water.

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3           6. A method for treating bone defects comprising the steps of  
mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
produce an injectable resorbable bone graft material in the form of a paste, the diluent

1 and the powder having a diluent to powder weight ratio of from 0.19:1 to 0.31:1; and  
2 injecting the injectable resorbable bone graft material in the bone defect.

1 7. A method for treating bone defects comprising the steps of  
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
3 produce an injectable resorbable bone graft material in the form of a paste, the calcium  
4 sulfate hemihydrate being formed of thick, stubby rod-like crystals; and  
5 injecting the injectable resorbable bone graft material in the bone defect.

8. A bone graft material, comprising: calcium sulfate hemihydrate, the  
calcium sulfate hemihydrate being formed of thick, stubby rod-like crystals.

1 9. A method for treating bone defects comprising the steps of  
2 mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
3 produce an injectable resorbable bone graft material in the form of a paste; and  
4 injecting the injectable resorbable bone graft material in the bone defect,  
5 the injectable resorbable bone graft material having a compressive strength in excess of  
6 15 MPa within one hour after said injecting step.

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8 10. The method of claim 9, wherein said bone graft material has a  
9 compressive strength of approximately 45-49 MPa within one hour after said injecting  
10 step.

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12 11. The method of claim 10, wherein said bone graft material has a  
13 compressive strength exceeding approximately 50 MPa within one hour after said  
14 injecting step.

1           12. A method for treating bone defects comprising the steps of  
2           mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
3           produce an injected resorbable bone graft material in the form of a paste; and  
4           injecting the injectable resorbable bone graft material in the bone defect,  
5           said injectable resorbable bone graft material having a compressive strength of at least  
6           6 MPa within 20 minutes after said injecting step.

1           13. A method for treating bone defects comprising the steps of  
2           mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
3           produce an injected resorbable bone graft material in the form of a paste; and  
4           injecting the injectable resorbable bone graft material in the bone defect,  
5           said injectable resorbable bone graft material having a compressive strength of at least  
6           35 MPa within 24 hours after said injecting step.

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8           14. The method of claim 13, wherein said bone graft material has a  
9           compressive strength of approximately 56 MPa within 24 hours after said injecting step..

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11          15. A method for treating bone defects comprising the steps of  
12           mixing a powder comprising calcium sulfate hemihydrate with a diluent to  
13           produce an injected resorbable bone graft material in the form of a paste, wherein when  
14           undergoing dry-testing, said bone graft material has a compressive strength of  
15           approximately 88 MPa within 24 hours after said mixing step.

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17          16. The method of claim 15, wherein said bone graft material has a  
18           compressive strength exceeding approximately 106 MPa within 24 hours after said  
19           mixing step.